

ZHAO ET AL.
"GPS Assistance Messages in Cellular
Communications Networks And Methods Therefor"
Atty. Docket No. CS90038

Appl. No. 09/785,960
Confirm. No. 2853
Examiner K. Ferguson
Art Unit 2682

1. (Previously Presented) A method for updating a satellite positioning system ephemeris data issue identifier transmitted to a satellite positioning system enabled mobile station in a cellular communications network, comprising:

receiving satellite positioning system ephemeris data at a reference node in communication with a cellular communications network;

generating an assistance message including satellite positioning system ephemeris data and other parameters;

generating a satellite positioning system ephemeris data issue identifier;

receiving updated satellite positioning system ephemeris data and other updated parameters;

updating the satellite positioning system ephemeris data issue identifier only when the satellite positioning system ephemeris data has been updated.

2. (Previously Presented) The method of Claim 1, not updating the satellite positioning system ephemeris data issue identifier when parameters other than the satellite positioning system ephemeris data change.

3. (Previously Presented) The method of Claim 1,
transmitting a satellite positioning system ephemeris data issue identifier over the cellular communications network,

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receiving the satellite positioning system ephemeris data issue identifier at a mobile station,

comparing the received satellite positioning system ephemeris data issue identifier with a corresponding satellite positioning system ephemeris data issue identifier stored at the mobile station,

reading a corresponding ephemeris assistance message at the mobile station only if the received satellite positioning system ephemeris data issue identifier is different than the stored satellite positioning system ephemeris data issue identifier.

4. (Previously Presented) The method of Claim 1,

receiving satellite positioning system ephemeris data from a plurality of satellites at a reference node in communication with a cellular communications network;

generating a plurality of assistance messages including satellite positioning system ephemeris data from the plurality of satellites and other parameters;

generating a satellite positioning system ephemeris data issue identifier for each of the plurality of assistance messages;

updating the plurality of satellite positioning system ephemeris data issue identifiers only when the satellite positioning system ephemeris data of the corresponding assistance message has been updated.

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5. (Previously Presented) The method of Claim 4, encoding each of the satellite positioning system ephemeris data issue identifiers and a corresponding satellite identifier in a corresponding sequence of binary digits, transmitting the sequence of binary digits over the network.

6. (Previously Presented) A method for updating a satellite positioning system almanac data issue identifier transmitted to a satellite positioning system enabled mobile station in a cellular communications network, comprising:

receiving satellite positioning system almanac data at a reference node in communication with a cellular communications network;

generating an assistance message including satellite positioning system almanac data and other parameters;

generating a satellite positioning system almanac data issue identifier;

receiving updated satellite positioning system almanac data and other updated parameters;

updating the satellite positioning system almanac data issue identifier only when the satellite positioning system almanac data has been updated.

7. (Previously Presented) The method of Claim 6, not updating the satellite positioning system almanac data issue identifier when parameters other than the satellite positioning system almanac data change.

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8. (Previously Presented) The method of Claim 6,
transmitting a satellite positioning system almanac data issue
identifier over the cellular communications network,
receiving the satellite positioning system almanac data issue
identifier at a mobile station,
comparing the received satellite positioning system almanac data
issue identifier with a satellite positioning system almanac data issue identifier
stored at the mobile station,
reading an almanac assistance message at the mobile station only
if the received satellite positioning system almanac data issue identifier is
different than the stored satellite positioning system almanac data issue
identifier.

9. (Previously Presented) The method of Claim 6, the satellite
positioning system almanac data issue identifier is for a cell, updating the
satellite positioning system almanac data issue identifier by incrementing a 2-
bit data field when the almanac data in the reference node is updated.

10. (Previously Presented) The method of Claim 6, the satellite
positioning system almanac data issue identifier for a Public Mobile Land
Network (PLMN) value tag, updating the value tag by incrementing an 8-bit
data field when the almanac data is in the reference node is updated.

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Claims 11 -15 (Canceled).

16. (Previously Presented) A satellite positioning system ephemeris data issue identifier for transmission to a satellite positioning system enabled mobile station in a cellular communications network, the satellite positioning system ephemeris data issue identifier comprising:

- a first field with satellite identifier data; and
- a second field with an ephemeris sequence number.

17. (Previously Presented) The satellite positioning system ephemeris data issue identifier of Claim 16, the first field is at least 5 bits, the second field is at least 3 bits.

18. (Previously Presented) The satellite positioning system ephemeris data issue identifier of Claim 16 is a broadcast message.

Claims 19-24 (Canceled).

25. (Previously Presented) A method for updating a satellite positioning system navigation data value tag transmitted to a satellite

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positioning system enabled mobile station in a communications network,
comprising:

receiving satellite positioning system navigation data at a
reference node in communication with the communications network;

generating an assistance message including satellite positioning
system navigation data;

generating a satellite positioning system navigation data value tag;

receiving updated satellite positioning system navigation data;

updating the satellite positioning system navigation data value tag
only when the satellite positioning system navigation data has been updated,

the satellite positioning system navigation data including at least
one of ephemeris and almanac data.

26. (Previously Presented) The method of Claim 25, encoding each
of the satellite positioning system navigation data value tags in a
corresponding sequence of binary digits as a 4-bit + 4-bit value tag,
transmitting the sequence of binary digits over the network.

27. (Previously Presented) A satellite positioning system
navigation data issue identifier value tag for transmission to a satellite
positioning system enabled mobile station in a communications network, the
satellite positioning system navigation data issue identifier value tag
comprising:

a first field with 4 bits; and

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a second field with 4 bits,
the satellite positioning system navigation data including at least
one of ephemeris and almanac data.

28. (Previously Presented) The satellite positioning system
almanac data issue identifier of Claim 26 is part of a broadcast message.

29. (New) A method in a wireless communication network that
communicates satellite positioning system navigation assistance messages to a
satellite positioning system enabled mobile station in the wireless
communication network, the method comprising:

providing satellite positioning system navigation information in
an assistance message; and

providing an issue identifier for the satellite positioning system
navigation information.

30. (New) The method of Claim 29,
using the issue identifier for determining whether to update
satellite positioning system navigation information stored on a satellite
positioning system enabled mobile station.

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31. (New) A method in a wireless communications network that generates assistance messages including satellite positioning system navigation information and a corresponding value tag for communication to a satellite positioning system enabled mobile station, the method comprising:

updating the value tag in the assistance message only when the satellite positioning system navigation data in the message has been updated.